

NEW SPECIES OF AND NOTES ON QUEENSLAND PLANTS, V

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SUMMARY

Two new genera *Austromatthaea* (Monimiaceae) and *Neorites* (Proteaceae) are described. *Suaeda arbusculoides* (Chenopodiaceae), *Elaeocarpus stellaris* (Elaeocarpaceae), *Calycopeplus casuarinoides* (Euphorbiaceae), *Austromatthaea elegans* (Monimiaceae), *Myoporum betcheanum* & var. *pubescens* (Myoporaceae), *Musgravea heterophylla* and *Neorites kevediana* (Proteaceae), *Olax pendula* (Olacaceae), *Argyrodendron actinophyllum* ssp. *diversifolium* and *A. polyandrum* (Sterculiaceae), and *Clerodendrum parvulum* (Verbenaceae) are described as new. *Pternandra cyanea* (Bl.) Triana (Melastomataceae), *Morinda salomonensis* Engl. (Rubiaceae), and *Lasiopetalum ferrugineum* Sm. (Sterculiaceae) are recorded from Queensland. The genus *Pternandra* has not previously been recorded from Australia, nor *Lasiopetalum* from Queensland.

Descriptions of a number of new species and notes on new records which have accumulated, chiefly while working up collections made in North Queensland, are published below in alphabetical order of families as in previous papers in this series which appeared in Proc. Roy. Soc. Qd 67: 29–40 (1956), 68: 43–50 (1957), 69: 43–51 (1958), and 70: 27–32 (1959). The terms proposed in Taxon 11: 145–156 (1962) are used to describe leaf-shapes, but for greater preciseness the ratio of length to breadth is added in brackets.

Acknowledgement is made with thanks to Mr. R. T. M. Pescott, Director and Government Botanist, National Herbarium of Victoria, Melbourne, for the loan of type specimens, and to Mr. J. H. Willis, at the same herbarium, for comparison of a specimen with a type and provision of helpful information. Citation of Melbourne specimens is followed by the abbreviation, MEL, from Index Herbariorum (Regnum Vegetabile vol. 31) 1964. Where no indication is given, specimens are at the Queensland Herbarium, BRI.

CHENOPODIACEAE

Suaeda arbusculoides species nova, a *S. australi* (R. Br.) Moq. habitu compactiore foliis brevioribus crassioribusque, fructibus majoribus, testa seminis membranacea dignoscenda. Typus: Mouth of the Pine River [near Brisbane], *Smith* 11387 (holotypus, BRI.078253).

Suffrutex glaber, dense ramosus, usque ad 30 cm altus, ad basem caule lignoso simplici 2–8 cm longo 1 cm vel ultra diam. praeditus. Ramuli teretes, 1–6 mm diam., juniores flexuosi, vetustiores cicatricibus foliorum delapsorum prominente notati; internodia 1–3 mm longa. Folia spiralia, subsessilia, carnosa, paulo glauca vel pallide rubella, anguste elliptica, (0·6–) 1·2–2 cm longa, (1·5–) 3–4 mm lata, 2·5–3 mm crassa, apice acuta et interdum mucronulata, basi brevissime angustata, supra saepe canaliculata, subtus rotundata. Flores axillares, singuli usque terni, subsessiles, unibracteati, bibracteolati, bracteis bracteolisque latissime ovatis 0·5–0·7 mm longis, 0·7–0·8 mm latis. Tepala 5, quincuncialiter imbricata, latissime ovata vel subrotundata, \pm 1·2 mm longa, 1·5–2 mm lata, carnosa, margine hyalina. Stamina 5, exserta, tepalis opposita; filamentum subulatum vel compressum, \pm 1·3 mm longum; anthera ovata, 0·9–1 mm longa, breviter apiculata. Ovarium depressum, 1-loculare, 1-ovulatum; stylus \pm 1 mm longus, usque ultra medium bilobus. Fructus depresso globosus, \pm 3·5 mm diam., tepalis auctis circumcinctus, stylo bifido persistenti coronatus; pericarpium tenue, submembranaceum. Semen fructui conforme; testa membranacea; embryo magnus, spiralis; albumen nullum.

QUEENSLAND.—MORETON DISTRICT: Mouth of the Pine River [near Brisbane], May 1961, *Smith* 11387; Sandgate, June 1918, *White*; Mosquito Creek [near Sandgate], Feb. 1929, *White* 6003, June 1930, *White* 6676; Nudgee Beach, July 1940, *Smith*; Southport, Apr. 1946, *White* 12808.

Suaeda australis (R. Br.) Moq. is by far the commoner species around Moreton Bay. It occurs on the better drained mangrove flats, fringing the rise to the zone characterised by *Sporobolus virginicus* (L.) Kunth, and also at the foot of sand dunes. Although usually more or less erect, on the salinas the lower branches often become decumbent and take root. When the central stem dies, a ring of vegetatively reproduced plants is formed and this may continue to expand.

Fringing shallow depressions where the water tends to lie between tides and on more poorly drained sites, *S. arbusculoides* occurs. It is readily distinguished from *S. australis*, which sometimes grows with it, by its more compact, more erect, and miniature tree-like appearance with short "trunk" at the base, and by its shorter, broader and thicker leaves. The tree-like shape suggested the specific epithet. The branches are never decumbent and do not root.

There is a single specimen from Townsville, collected in Feb. 1962 by W. Macnae, which may represent *S. arbusculoides* but I cannot be sure from the material available.

The following key will distinguish the two species:—

- Leaves up to 4 cm long, 2·5 mm wide, and 1·5 mm thick; upper surface slightly convex.
Flowers up to 9 in each cluster. Seed black and shining with hard coat and \pm 1·5 mm diam. *S. australis*
- Leaves up to 2 cm long, 3–4 mm wide, and 2·5–3 mm thick; upper surface often shallowly channelled. Flowers rarely more than 3 in each cluster. Seed pale with thin transparent coat through which the coiled green embryo is visible, \pm 3·4 mm diam. *S. arbusculoides*

ELAEOCARPACEAE

Elaeocarpus stellaris species nova, ob racemos umbelliformes paucifloros et putamen in sectione transversali non circulare *E. bancroftii* F. Muell. et F. M. Bail. affinis, sed putamine longitudinaliter grosseque quinqueporcato et in sectione transversali \pm stellato a speciebus omnibus mihi notis bene distincta. Typus: near Gregory Falls, \pm 11 miles WSW. of Innisfail, *Smith* 5349 (holotypus, BRI.078262).

Arbor mediocris, usque ad 20 m alta. Ramuli \pm costulati, grisei, 2–5 mm diam., apicem versus breviter appresseque pubescentes, vetustiores lenticellati cortice minute fissurato; internodia 3–20 cm longa. Stipulae anguste ovatae, \pm 4 mm longae, ante expansionem foliorum delapsae. Folia spiralia, apicem ramulorum versus \pm aggregata, glabra; lamina tenuiter coriacea, elliptica vel interdum oblongo- vel obovato-elliptica (2.1–2.4:1), 10.5–18 cm longa, 4.5–8.2 cm lata (vel foliorum plantarum juvenilium usque ad 28 cm longa et 10.5 cm lata), apice obtusa vel breviter acuminata, basi angustata, margine crenulata paulo decurva, subtus domatiis in axillis nervorum lateralium, costa supra prominenti subtus elevata, nervis lateralibus utrinsecus 7–10 intra marginem \pm conjunctis subtus prominentioribus; petiolus 2–6.5 cm longus (vel foliorum plantarum juvenilium interdum brevior), supra \pm canaliculatus, subtus rotundatus, basi apiceque pulvinatus. Racemi umbelliformes (perjuveniles tantum visi), 3–6-flori, fulvo-tomentosi, in axillis foliorum delapsorum orti; pedunculus robustus, saepe curvatus, 3–7 (–8 sub fructu) mm longus; pedicelli perbreves (sed sub fructu 1.4–2.4 cm longi), bractea rotundata \pm 2 mm longa subtenti. Flores maturi non visi; alabastra juvenilia depresso globosa, \pm 4.5 mm diam.; sepala valvata, crassa, deltoidea, \pm 2 mm longa, extus fulvo-tomentosa, intus pubescentia; petala alternisepala, tenuia, late cuneata vel late obrullata, \pm 0.6 mm longa, extus \pm pubescentia; stamina perjuvenilia, \pm 70, pro parte majore aggregata oppositipetalaque; ovarium perminutum, 5-merum (sec. fructum). Fructus cyaneus, drupaceus, late ellipsoideus vel late ovoideus, 5–6 cm longus, 4–5 cm latus, apice pubescens obtusus, basi rotundatus, obscure 5-angularis, 5-locularis, loculis 1- vel 0-spermis; exocarpium tenue; mesocarpium fibrosum, usque ad 1.1 cm crassum; endocarpium lignosum, longitudinaliter grosseque 5-porcatum, porcis longitudinaliter unisulcatis usque ad 1.1 cm altis \pm 0.9 cm latis partem anteriorem compressam loculorum continentibus, canalibus inter porcas ad medium \pm 1.8 cm latis extremitates versus angustioribus minus profundis. Semina compressa trigona, \pm 2.5 cm longa, 1 cm lata, 0.6 cm crassa.

QUEENSLAND.—COOK DISTRICT: Near Gregory Falls, \pm 11 miles WSW. of Innisfail, Sep. 1954, *Smith* 5349, Sep. 1954, *K. J. White* AFO/898.

E. stellaris and *E. bancroftii* are sharply distinguished from other Australian species of *Elaeocarpus* by having the racemes reduced almost to umbels. The two also agree in having large fruits, 4 cm or more long, the endocarp not round in transverse section, and the stamens grouped in front of the petals. However, *E. stellaris* differs from *E. bancroftii* in having a thinner and sparser indumentum near the ends of the branchlets, somewhat larger leaves, a 5-locular instead of 4-locular ovary, larger fruits (over 5 cm long) with more fibrous mesocarp, and

especially in the stone or endocarp being stoutly 5-ribbed instead of obtusely 4-angled. In cross-section the endocarp looks like a blunt-rayed star and this suggested the specific epithet.

E. stellaris is an understory tree (so far as seen) in lowland or foothill rain-forest on basaltic soils in North Queensland. It grows to at least 18 m in height, and the bole is then about 30 cm in diameter and shortly buttressed at the base. The outer bark is brownish and marked by longitudinal lines of lenticels; the inner bark is yellowish brown or yellowish against the sapwood. The timber is pale throughout.

EUPHORBIACEAE

Calycopelus casuarinoides species nova, *C. ephedroides* Planch. affinis, sed glandulis involucri ultra bis majoribus, stipite glandulae pubescenti, pedicello floris ♀ brevoire, capsulis subglobosis nec oblongis differt. Typus: Aurukun Mission, near Archer River mouth, Feb. 1964, *W. F. MacKenzie* (holotypus, BRI.078263, 078264).

Frutex glaber, 1–2 m altus, ramulis ± cernuis; interdum arbuscula 4–5 m alta, trunco usque ad 15 cm diam. cortice atrato fissurato lactifero. Ramuli viriduli, plerumque 6-costati, 0.5–2 mm diam., saepe oppositi, lactiferi; internodia 1–5.5 (–14) cm longa. Folia normalia non visa, in ramulis floriferis squamiformia, brunnea, crassa, ± 1 mm longa. Cyathia ad nodos ramulorum opposita; pedunculus 0.5–1.5 mm longus, bracteis duobus ± 1.2 mm longis obtusis vel interdum breviter 2–3-lobatis basi ± unitis subtentus; involucrium late campanulatum, 2–3 mm longum, 4-lobatum, lobis rotundatis 0.5–1 mm longis margine hyalinis, inter lobos 4-glanduliferum, glandulis subrotundis vel subquadrato-rhombicis ± 1.5 mm longis breviter stipitatis stipite pubescenti. Flores ♂ bracteis intermixti, in fasciculis 4 bracteatis usque 9-floris lobis involucri oppositis dispositi; bractearum pubescentium exteriores 2–4 obovatae ± 1.8 mm longae, interiores successive breviores angustioresque; pedicellus 0.6 mm vel demum 3 mm longus, apice articulatus; filamentum ± 0.5 mm longum; anthera 0.5–0.6 mm longa, 0.5–0.7 mm lata. Flores ♀ ebracteati, ad centrum involucri solitarii; pedicellus usque ad 1 mm longus; perianthium in lobis 4–6 inaequalibus demum ± 1 mm longis obtusis margine hyalinis ± profunde divisum; ovarium 3-loculare, 3-ovulatum, apice stylo 3-ramoso ramis ± 1 mm longis recurvis breviter bifidis basi breviter unitis coronatum. Fructus in ambitu subrotundus, (siccatus) 3-lobatus, 4–5 mm longus, 4.5–5.5 mm latus, apice stylo persistenti saepe ornatus. Semina 3, laevia, ± oblongo-ellipsoidea, 2.2–2.8 mm longa, 1.7–1.9 mm lata, carunculata.

QUEENSLAND.—COOK DISTRICT: Jardine River, May 1948, *Brass* 18883; Aurukun Mission, near Archer River mouth, Oct. 1962, *Webb & Tracey* 6255, Dec. 1962, Feb. 1964, Mar. 1964, May 1964, *W. F. MacKenzie*; 5 to 6 miles NW. of Hann River crossing, Laura–Coen road, Oct. 1962, *Smith* 12034; Hann River, Aug. 1966, *Volck*; near Lakes Creek, ± 21 miles SE. of Hann River crossing on Laura–Coen Road, Oct. 1962, *Smith* 12041.

There can be little doubt that *C. casuarinoides* was first collected by F. Mueller in Oct. 1856 from the Newcastle Range, roughly between Einasleigh and Forsyth, while accompanying A. C. Gregory on his expedition from the Victoria River to Brisbane. In J. Landsborough's Exped. Appx. 14 (1862), Mueller listed it as *Ephedra arborea* F. Muell. but gave no description. Although I have not examined the specimen, Bentham's remarks in Fl. Aust. 6: 54 (1873) clearly indicate it to be a *Calycopeplus* and almost certainly the present species. It was not until 1948, when Brass collected sterile specimens from the Jardine River, that the plant was again collected. Due to the perseverance of the Rev. W. F. MacKenzie, fertile material was finally collected in 1964, over 100 years after the plant was first seen. However, as flowers and fruit develop during the wet season, in the first few months of the year, it is not surprising that the wait has been so long. Movement through this country is not normally attempted during the wet season.

In 1963, before fertile specimens were available, wood samples of *C. ephedroides*, kindly supplied by Mr. R. D. Royce, Western Australian Herbarium, Perth, and of the North Queensland species were sent to Mr. H. D. Ingle, C.S.I.R.O. Division of Forest Products, Melbourne, for examination. He could see no reason why the two should not be congeneric so far as their wood anatomy went, although spirals were consistently present in the vessels of *C. ephedroides* but only traces of them were present in the smaller vessels of *C. casuarinoides*.

The distribution of *C. casuarinoides* appears to be from the Gilbert River to the Jardine River around the eastern side of the Gulf of Carpentaria, and to the south of Princess Charlotte Bay on the eastern side of the Great Dividing Range. Throughout this range it is attacked by a gall-forming insect, and the pinkish galls, about 6 mm in diameter, which form at the nodes are often mistaken for fruit. In the Hann River area it occurs in more open woodland, usually near a creek or gully or on a flat, and disturbance, e.g. near roadsides, appears to favour its spread. Larger plants, 3.5 to 4.5 m high, are common around waterholes in rocky creeks. The superficial resemblance from a distance of these larger plants to species of *Casuarina* suggested the specific epithet.

It is sometimes called kerosene wood because the dry wood and branchlets burn very readily. The smoke is said to smell somewhat like that of sandalwood, *Santalum lanceolatum* R. Br., and to keep mosquitoes away.

Calycopeplus Planch., which differs little from *Euphorbia* L. sens. lat., is now known from the diagonally opposed south western and north eastern corners of Australia. It might be expected to be found in the Kimberley area of Western Australia or in Northern Territory.

MELASTOMATACEAE

Pternandra cyanea (Bl.) Triana, Trans. Linn. Soc. 28: 153 (1871).

QUEENSLAND.—COOK DISTRICT: Near Bamaga Settlement, \pm 17 miles SW. of Cape York, Oct. 1965, *Smith* 12358, 12358a, May 1962, *Webb & Tracey* 6102.

NEW GUINEA.—MOROBE DISTRICT: Markham Point near Lae, Feb. 1960, *Womersley & Henty* NGF.11684, May 1963, *Hartley* 11913. WESTERN DISTRICT: Dagwa, Oriomo River, Feb.-Mar. 1934, *Brass* 5959.

This is the first record from Australia of a genus previously known to extend from Burma to New Guinea. Queensland material agrees fairly well with that from New Guinea and with Blume's description and plate in *Rumphia* 1: 24, t.8 (1835).

Although the genus appears in need of revision, and little material is available for comparison at Brisbane, I have preferred to use the name *P. cyanea* rather than *P. capitellata* Jack, under which New Guinea material has been recorded, because our plant has the smaller leaves, shortly paniculate inflorescence (under optimum conditions), and blue flowers of the former species, which also has a more easterly range (at least as to specimens he examined) according to Bakhuizen in *Rec. Trav. Bot. Neerl.* 40: 323-8 (1943). However, it did not seem advisable to follow Bakhuizen in treating *P. cyanea* as a variety of *P. coerulescens* Jack, because a new combination, perhaps needless when the genus is revised, would be necessary as he chose the earliest specific epithet instead of the earliest varietal epithet available as demanded by ICBN Art. 60.

MONIMIACEAE

Austromatthaea genus novum, in tribu Mollinediearum ponendum; *Matthaeae* Bl. affine sed tepalis majoribus, staminibus \pm 7-9-plo pluribus, connectivo non producto differt.

Flores monoeci (vel interdum dioeci?). Flores δ latissime ovoidei; tepala 4, receptaculum subaequantia vel paulo longiora; stamina 28-36, in seriebus 3-4 partem planam sparse setulosam receptaculi tegentia; filamenta brevissima; antherae ovatae vel oblongo-ovatae, 2-loculares, loculis parallelis contiguas rima longitudinali singulatim dehiscentibus. Flores η majores, depresso ovoidei; tepala 4, receptaculo paulo breviora; receptaculum praeter marginem erectam planum, intus dense setulosum, parte superiore cum tepalis circumscisse decidua; carpella pernumerosa extus pubescens, 1-ocularia, 1-ovulata, ovulo pendulo. Fructus ex drupis multis 1-spermis stipitatis receptaculo aucto \pm revoluto insidentibus constans. Semina albuminata; embryo rectus, angustus, radicula superiore. — Arbuscula. Folia opposita, petiolata, serrata. Flores pedicellati, δ terni η singuli ad apicem pedunculo siti; pedunculus apice bibracteatus, basi bractea lineari vel interdum (floribus η) folio subtentus. Drupae basi articulatae, mesocarpio carnosio, endocarpio tenuiter cartilagineo.

Species 1, Australiae septentrionali-orientalis incola.

Austromatthaea elegans species nova. Typus: Several miles NW. of Kuranda, on Forest Res. 1073, *Smith* 10847 (holotypus, BRI.078528).

Frutex vel arbuscula usque ad 6 m alta, ramulis aliquantum pendulis. Ramuli subteretes, flavobrunneo-tomentosi, 1-2 (-4) mm diam., nodis ob petiolos breviter decurrentes latis factis; internodia 1.2-6 cm longa. Folia opposita vel interdum

subopposita, pubescentia, supra \pm glabrescentia; lamina firme chartacea, anguste ovata vel oblongo-ovata (4-5.5:1), 8-16 (-20.7) cm longa, 1.5-3.5 (-4.5) cm lata, apice caudato-acuminata, basi rotundata vel interdum breviter cordata vel obtusa, margine anguste decurva glanduloso-serrata serraturis 0.3-0.8 (-1.4) cm distantibus, costa supra in sulco angusto immersa subtus elevata, nervis lateralibus principalibus utrinsecus 8-16 intra marginem conjuncti supra prominulis subtus elevatis, reti venularum laxo subtus prominenti; petiolus 0.5-1 cm longus. Flores 1-12 apicem versus ramulorum vel in ramulis bracteiferis brevibus axillaribus siti; pedunculus tomentosus, 0.7-3.5 cm longus, bractea lineari 0.5-1 cm longa vel raro folio subtentus, apice bibracteatus, bracteis linearibus \pm 0.5 cm longis; pedicelli sparse pubescentes, 0.5-2 cm longi, florum δ bini vel terni florum η singuli dispositi. Flores δ praeter receptaculum sparse setulosum glabri, latissime ovoidei, usque ad 7.3 mm longi, 7.5-10 mm diam.; tepala 4, anguste imbricata, deltoidea, \pm 4 mm longa, 4-5 mm lata; stamina 28-36, filamentum \pm 0.1 mm longo, anthera ovata vel oblongo-ovata \pm 2.3 mm longa, \pm 1.3 mm lata apicem versus saepe excurva dorso connectivo usque ad 0.7 mm lata. Flores η extus glabri, depresso ovoidei, 0.8-1 cm longi, 1.3-1.5 cm diam.; tepala 4, glabra, anguste imbricata, deltoidea, \pm 4 mm longa, 5-6 mm lata; carpella ∞ (\pm 200), setulis flavobrunneis densis \pm 1.5 mm longis intermixta, \pm pubescentia, stigmatibus verruculosis \pm 1.6 mm longo incluso \pm 3.7 mm longa. Fructus receptaculum pubescens, auctum, convexum, \pm 2 cm diam., supra stipitibus 2-3 mm longis 2 mm diam. apice articulatis praeditum; drupae 24-46, glabrae, ellipsoideae vel obovoideae, usque ad 1.5 cm longae, 1 cm latae, pericarpio 1.5-2 mm crasso. Semina compressa ellipsoidea vel obovoidea, 9-12 mm longa, 7-8 mm lata, 5.3-7 mm crassa; embryo longitudine $\frac{1}{3}$ seminis aequans. Fig. 1, 3 a-g.

QUEENSLAND.—COOK DISTRICT: Several miles NW. of Kuranda, on Forest Res. 1073, Sep. 1959, *Smith* 10847, Aug. 1960, *Volck* AFO/1945; Davies Creek area, \pm 10 miles E. of Mareeba, Aug. 1954, *Smith* 5250, *Volck* AFO/869; Hugh Nelson Range, Crater Logging Area, Nov. 1958, *Smith* 10509, 10511, *Volck* AFO/1576; Koolmoon Creek area, \pm 11 miles SSE. of Ravenshoe, Aug. 1954, *Smith* 5279.

Among genera of Monimiaceae with calyptrate female flowers, only a few atypical species in the heterogeneous American genus *Mollinedia* Ruiz & Pavon and species of *Matthaea* Bl. from the Malayan-Philippines area have similar anthers with cells opening separately and the same number of tepals as *Austromatthaea*. *Mollinedia* was founded on a few Peruvian species with appendages on the inner tepals and in its strict sense seems distinct so far as one can judge from Perkins & Gilg in *Pflanzenr.* Heft 4 (1901). *Matthaea* differs in having only 4 stamens with the connective produced.

Other genera in North Queensland in which the top part of the female flowers is shed like a calyptra are *Steganthera* Perk., *Tetrasynandra* Perk., *Wilkiea* F. Muell., and *Kibara* Endl., but all have fewer stamens (4-15) in the male flowers. In addition *Wilkiea* and *Kibara* have flowers with 6 (-8) tepals, and the anthers of *Steganthera* and *Tetrasynandra* appear to open in a single more or less horizontal slit and in *Tetrasynandra* are borne at the top of a staminal column. In

the remaining genera in the family from this area, *Levieria* Becc., *Palmeria* F. Muell., *Daphnandra* Benth., *Doryphora* Endl., and *Dryadodaphne* S. Moore, the perianth of the female flowers splits longitudinally and not transversely and no calyptra is formed.

Austromatthaea elegans is a shrub or small tree, little branched and with the ends of the branches drooping, which occurs in the rain-forest understory mostly at altitudes between about 520 and 1200 m in north-east Queensland although a few plants were noticed by Dr. L. J. Webb and Mr. J. G. Tracey on the lowlands near El Arish (personal communication). The bark is longitudinally wrinkled and the wood has broad medullary rays similar to *Wilkiea*.

MYOPORACEAE

Myoporum betcheanum species nova, ob folia serrata *M. bateae* F. Muell. et *M. platycarpi* R. Br. similis, sed fructibus non compressis, ovario pro more 3-loculari differt. Holotypus: Cunningham's Gap, Dec. 1954, A. W. S. May (BRI.078529).

Arbor parva, usque ad 8 m alta, trunco usque ad 15 cm diam. Ramuli 1-5 mm diam., apicem versus glandulis capitatis minutis subsessilibus vel breviter stipitatis induti vel (in var. *pubescenti*) pilis simplicibus commixti, juniores angulati \pm glanduloso-tuberculati, vetustiores teretes rugulosi cicatricibus foliorum delapsorum conspicue notati. Folia spiralia; lamina primum glandulis minutis subsessilibus vel breviter stipitatis sparsissime induta, demum glabrescens vel (in var. *pubescenti*) subtus saltem pilis simplicibus persistente pubescens, pellucido-punctata, papyracea vel tenuiter coriacea, peranguste ovata vel peranguste elliptica (6-11:1), 5.5-10.5 cm longa, 0.6-1.4 cm lata (vel in plantis juvenilibus usque ad 14.5 cm longa et 1.8 cm lata), in apicem acutum longe attenuata, basi angustata, margine angustissime decurva glanduloso-serrata serraturis 1-4 (-7) mm distantibus, costa supra in sulco angusto sita subtus elevata, nervis lateralibus utrinsecus 5-8 adscendentibus intra marginem \pm conjunctis saepe obscuris; petiolus indistinctus, subnullus vel usque ad 0.8 cm longus et lamina decurrenti peralatus. Florum fasciculi axillares 1-8-flori; pedicelli glabri vel (in var. *pubescenti*) \pm pubescentes, modice gracili, sursum incrassati, 0.8-1.1 cm longi. Calyx profunde fissus, extus glaber vel (in var. *pubescenti*) \pm pubescens, sub fructu persistens; segmenta anguste ovata, 2.1-3.1 (-4.4) mm longa, 1-1.2 mm lata, longe acuminata, \pm acuta, interdum recurva, obtuse carinata, margine glandulis stipitatis perpaucis obsita. Corollae albae extus glabrae, tubus campanulatus, 3-3.2 mm longus, intus parte inferiore glabra excepta barbatus; lobi 5, late oblongi, 2.6-2.9 mm longi, obtusi vel rotundati vel anterior emarginatus, infra medium barbati. Stamina 4, subaequalia, exserta; filamenta glabra, circa medium tubi corollae affixa, 2.9-4.2 mm longa; antherarum loculi \pm 1 mm longi, divergentes. Ovarium glabrum, oblongum, 1.6 mm longum, 1.3 mm latum, (2-) 3 (-4)-loculare, loculis 1-ovulatis, apice rotundatum, stylo pubescenti 4-4.5 mm longo coronatum. Fructus drupaceus, \pm purpureus, (2-) 3 (-4)-spermis, suborbicularis, 5-6 mm diam.

M. betcheanum var. **betcheanum**, ramis foliisque pilos eglandulosos carentibus dignoscenda.

QUEENSLAND.—MORETON DISTRICT: Mistake Mts, Dec. 1947, *W. J. Cameron*. DARLING DOWNS DISTRICT: Mt. Cordeaux, May 1961, *Smith* 11306; Cunningham's Gap area, Dec. 1954, *A. May*; Mt. Mitchell, Apr. 1950, *White*; Spicer's Gap, May 1924, *T. H. Price*; E. of Bald Mt., ± 23 miles E. of Warwick, Apr. 1962, *Smith* 11465; Forest Res. 400, ± 22 miles a little S. of E. of Warwick, Apr. 1962, *Smith* 11471.

NEW SOUTH WALES.—NORTH COAST DIVISION: Whian Whian State Forest, near Peach Mt., Nov. 1949, *White*.

M. betcheanum var. **pubescens** varietas nova, ramulis, foliis (saltem subtus), pedicellis, et calycibus pubescentibus pilis simplicibus dignoscenda. Typus: Beaury State Forest, *White* 12800 (holotypus, BRI.078530).

QUEENSLAND.—DARLING DOWNS DISTRICT: The Head, near Wilson's Peak, Dec. 1965, *Smith* 12775.

NEW SOUTH WALES.—NORTH COAST DIVISION: Beaury State Forest, May 1945, *White* 12800; Tooloom Scrub, Mar. 1944, *White* 12510.

M. betcheanum occurs broadly in the vicinity of the junction of the McPherson Range and Great Dividing Range and adjacent highlands on red basaltic loams at altitudes between about 850 and 1100 m. It grows on the margin of rain-forest and seems to be the only species of the genus closely associated with this community. It sometimes comes up densely where areas have been cleared. *M. montanum* R. Br. occurs on poorer soils in the area which carry Eucalyptus forest, but it is normally at lower altitudes.

The species has been named after E. Betche, who, to judge from correspondence between R. H. Anderson and C. T. White in 1946, was the first to recognize the species as distinct.

Although there are differences, the description of Demmler's specimen from an unknown locality provided by Kraenzlin in *Repert. Sp. Nov. Beihefte* 54: 29 (1929) under the name *M. glabrum* F. Muell. reads something like that of *M. betcheanum*. However, Mr. J. H. Willis has kindly advised that no specimens at Melbourne bear the name *M. glabrum* in Mueller's handwriting so that it is based on the drawings in *Myop. Pl. Aust.* pl. 70 (1886), and this plant has entire, not serrate, leaves. *M. glabrum* is therefore distinct from the present species.

The type specimen of *M. betcheanum* var. *pubescens* is much more extensively and densely hairy than either of the other two specimens cited, but all have simple hairs present, at least on the young shoots and the underside of the leaves, whereas such hairs are entirely lacking in the typical variety.

OLACACEAE

Olax (§ Triandrae) **pendula** species nova, ob flores singulos et staminodia furcata *O. benthamianae* Miq. et *O. retusae* F. Muell. ex Benth. affinis, sed statura elatiore, ramulis pendulis, foliis majoribus in apicem pergracilem longe

attenuatis, antheris in appendices duas lineares prolongatis differt. Typus: Fishbone Creek, near Jacky Jacky Air-strip (± 17.5 miles SSW. of Cape York), *Smith* 12428 (holotypus, BRI.078531).

Arbuscula glabra, usque ad 3–4 m alta. Ramuli penduli, subteretes, graciles, 0.5–2 mm diam., longitudinaliter rugosi, vetustiores etiam transverse minute denseque rugulosi; internodia 2–10 mm longa. Folia alterna, disticha, articulata; lamina papyracea (in vivo crassiuscula), prope marginem irregulariter pellucido-punctata, interdum paulo falcata, anguste vel angustissime ovata (4.5–8.5:1), (1–) 3–7.5 (–8.3) cm longa, (3–) 6–14 mm lata, in apicem pergracilem rectum vel paulo uncinatum longe attenuata, basi obtusa, margine integra, costa supra prominula subtus elevata, nervis obscuris; petiolus 0–1 (–1.5) mm longus, margine per laminam decurrentem alatus, supra canaliculatus. Flores pallide virides, singuli in axillis foliorum superiorum orti, in alabastro anguste ovoidei usque ad 4.5 mm longi; pedicellus 2–4 (–6.5 sub fructu) mm longus. Calyx cupulatus, truncatus, ± 0.3 mm longus, mox accrescens. Petala 5, horum 1 liberum 4 per stamina binatim basi breviter (usque ad 0.8 mm) unita, omnia mox delapsa, anguste ovata, ± 4.2 mm longa, 1.3–1.5 mm lata, intus apice retrorsum breviappendiculata infra medium pilis paucis ornata. Stamina 3, horum 1 prope marginem petali liberi 2 inter petala jugi utriusque reliqui posita, omnia ± 3.4 mm longa; filamenta complanata, ± 1.75 mm longa, 0.3–0.7 mm lata, usque ad medium petalis adnata; antherae ovatae, ± 1 mm longae, 0.7 mm latae, apice in appendices duas lineares ± 0.6 mm longas prolongatae. Staminodia 5, prope marginem petalorum posita et inferne eis adnata, complanata, 3.6 mm longa, 0.3–0.5 mm lata, e medio bifida lobis \pm sinuatis. Ovarium superum, late ovoideum, 1.3 mm longum, 1-loculare vel basi breviter 3-loculare; ovula 3, ellipsoidea, ex apice placentae columnaris centralis basalis pendula; stylus brevis, 0.2 mm longus; stigma quam stylus latus, 0.3 mm longum, ± 3 -lobatum. Fructus ellipsoideus, 1.1 cm longus, 0.8 cm latus, in sicco crustaceus, usque ad $\frac{2}{3}$ – $\frac{3}{4}$ per calycem auctum flavidum vel aurantiacum carnosulum inclusus, apice stylo brevi persistenti coronatus; semen 1, albidum, oblongum, 7.5 mm longum, 5 mm latum, ex apice placentae gracilis per funiculum 2.5 mm longum pendulum (etiam funiculi abortivi duo 1.7 mm longi adsunt).

QUEENSLAND.—COOK DISTRICT: Fishbone Creek, near SE. end of Jacky Jacky air-strip (or ± 17.5 miles SSW. of Cape York), Oct. 1965, *Smith* 12428; ± 20 miles a little W. of N. from Moreton Telegraph Office (or ± 102 miles S. of Cape York), July, 1968, *Gittins* 1830; Nimrod Creek, ± 15 miles a little W. of N. of Moreton Telegraph Office, ca. 1942, *Whitehouse*.

O. pendula can be distinguished from the other five species of *Olax* L. in Australia by its terminally appendaged anthers and larger leaves. Geographically adjacent species are the leafless and hairy *O. aphylla* R. Br. from the western side of the Gulf of Carpentaria, and *O. retusa* F. Muell. ex Benth. with small retuse leaves and bifid but bearded staminodia and *O. stricta* R. Br. with small pointed leaves and undivided more or less bearded staminodia, both from south-east Queensland and New South Wales. *O. imbricata* Roxb. is the only species recorded

from New Guinea and this differs in having a racemose inflorescence. *O. nana* Wall. from the Himalayan area appears to be the nearest extra-Australian species with solitary flowers.

PROTEACEAE

Musgravea stenostachya F. Muell. Proc. Linn. Soc. N.S.W. Ser. 2, 5: 186-7 (1890). Lectotypus: Mt. Bellenden Ker, June 1889, *Sayer* (MEL).

QUEENSLAND.—COOK DISTRICT: Mt. Spurgeon, Sep. 1937, *White* 10713; Mt. Alexander [now Thornton Peak], Dec. 1929, *Kajewski* 1495; Whitfield Range, July 1961, *Dansie* AFO/2661, Aug. 1961, *Hyland* AFO/2050; Clohesy River area, Dec. 1958, *Dansie & Volck* AFO/1490; Davies Creek, Aug. 1954, *Smith* 5257; Mt. Edith, N. of Danbulla, Aug. 1948, *Smith* 3756; Lambs Range, Oct. 1955, *K. J. White*; Yungaburra, Dec. 1935, *Dreghorn*; Hugh Nelson Range, Crater Logging Area, Nov. 1958, *Smith* 10508, 10508A; Mt. Bellenden Ker, 1887, *Sayer* 92 (MEL), June 1889, *Sayer* (MEL); Mt. Bartle Frere, June 1961, *Martin & Hyland* AFO/1892.

M. stenostachya was described from material now distributed over five sheets (syntypes) at Melbourne. An envelope and a packet on two of the sheets are displaced. Although cited as two collections with the original description, there appear to be three, but only two collectors are involved. As two discordant elements are represented a lectotype had to be chosen before one of them could be described as new.

Mueller's reference to "On the Johnston River, Dr. Th. L. Bancroft" applies to three of the sheets. Collections at Brisbane suggest all are part of a collection made in 1885 by T. L. Bancroft on the Johnstone River, as a voucher for a timber sample, "S". They were sent by F. M. Bailey, possibly at different times, for Mueller's opinion on whether they could be *Darlingia spectatissima* F. Muell. (i.e. *D. darlingiana* (F. Muell.) L. Johnson). One sheet is dated 1885 and contains a misplaced folded packet; another is dated 1889 and was possibly received in that year as supplementary material because it adds a very few old flowers, or it could belong with the first sheet with the date miscopied because of a poorly written "5"; the third sheet with fruits and a lobed leaf is unlabelled but may have been received in 1890 because one packet on it is marked "F. M. Bailey. 1890". This collection was used in preparing the original description because the racemes were described as up to 8 inches long and the leaves as sometimes brownish beneath. However, as each sheet lacks either flowers or fruits or both, and as no reference is made in the original description to the lobed leaf on the undated sheet, none is suitable as lectotype nor are all sheets jointly acceptable. The element represented by Bancroft's sheets is described below as *M. heterophylla*.

The other element is represented by the two remaining sheets. In the protologue they were referred to as "On Mount Bellenden-Ker, W. Sayer". The specimens do not match and must have been collected at different times or possibly from different trees. According to both field and herbarium labels, one sheet was collected from Mt. Bellenden Ker by W. A. Sayer as No. 92 from a tree 50 ft. high with a trunk 18 in. in diameter. With it the folded packet from the Bancroft sheet dated 1885 clearly belongs. An additional large plain label suggests that this sheet, which is in bud only, was sent to Sydney for exhibit at the meeting of the

Linnean Society of New South Wales held on 26 March, 1890 (see Proc. Linn. Soc. N.S.W. Ser. 2, 5: 243 (1890)). To provide open flowers as well Mueller may have added the large white envelope containing material from the second Sayer sheet, and this should now be returned to it. Accepting *Sayer* 92 as including only the mounted material and the contents of the folded packet mentioned above, the sheet comprises leaves, inflorescences with fairly mature flower buds and a single old fruit. Although the better preserved specimen with more characteristic colouring, it lacks the open flowers of the second Sayer sheet which therefore agrees better with the original description and must be chosen as lectotype.

The stage of development of the flower buds on *Sayer* 92 suggests that it was collected in late 1886 rather than early in 1887, the date on the sheet. This seems more likely to be the date when it was received by Mueller. During the first half of 1887, Sayer's own account of two trips to the summit of Bellenden Ker with only a week between was published in Vict. Nat. 4: 37–44 (1887) but he mentions no dates. However, according to Meston in Rept. Bellenden-Ker Exped. 7–8 (1889), Sayer claimed to have been on the summit in 1886, so that collection in late 1886 does seem possible. It has not been found whether the second trip was completed in 1886 or early in 1887. It is also of interest to note that Meston claimed that Sayer climbed a peak 3,970 ft. high (possibly what is now called the South Peak) and did not reach the actual summit. However, *Dracophyllum sayeri* F. Muell. was first collected by Sayer while on these trips and while climbing the central peak of Bellenden Ker I did not notice it until altitudes above this were reached. Meston's opinion could therefore be wrong.

The second Sayer sheet, the one chosen as lectotype, bears Mueller's manuscript notes for preparation of the original description and a mounted specimen with rather depauperate inflorescences. The herbarium label originally bore only the name *Musgravea stenostachya*. Later, and in a different hand, some of the data from *Sayer* 92 were apparently incorrectly added and the altitude 5,200 ft. given. The contents of the large white envelope referred to in discussing *Sayer* 92 could only belong here. The lack of dark reddish brown hairs on the peduncles and bracts distinguishes the inflorescences from those on the Bancroft sheets, and the stage of development of the flowers distinguishes them from *Sayer* 92. Further, on the inside of the folded packet within the white envelope is written "For the Baron, W. A. Sayer, 7/6/89". The stage of the inflorescence again suggests that this is a forwarding date and collection was made earlier in the year. Meston's quotation of Sayer ". . . I mean to go back again [to Mt. Bellenden Ker]" may be significant although no other evidence of a third trip was found. Evidence available therefore indicates that the lectotype was collected on Mt. Bellenden Ker by W. A. Sayer early in 1889 and is not a duplicate of *Sayer* 92 which was collected from the same locality probably late in 1886.

Musgravea heterophylla species nova, *M. stenostachyae* F. Muell. affinis sed foliis plantarum juvenilium et intermediarum pinnatifidis adularum integris subtus ferrugineis vel demum cinerascentibus, pseudoracemis longioribus, pedunculis cum bracteis atque apicibus alabastrorum ferrugineis vel rubiginosis, folliculis et seminibus majoribus differt. Typus: ± 1 mile WSW. of Kuranda, *Dansie* AFO/2015 (holotypus, BRI.031170).

Arbor usque ad 25 m vel ultra alta. Ramuli 2–9 mm diam., juniores paulo angulati rubiginoso-tomentelli, vetustiores teretes \pm cinereo-tomentelli; internodia 0.3–1.8 cm longa. Folia spiralia, interdum \pm aggregata (vel plantularum duo prima opposita); “juvenilia” (in plantulis usque ad 15 cm altis) 2.8–15 cm longa, 2.3–9 cm lata, pinnatifida, lobis 3–6 alternis \pm erecto-patentibus acutis vel breviter acuminatis, supra dissite appresseque pubescentia mox glabrescentia, subtus pallide ferruginea tenuiter arachnoidea, breviter petiolata; “intermedia” (e plantis 3–6 m altis vel ultra) 15–55 (vel ultra) cm longa, 8–30 cm lata, pinnatifida, lobis 6–18 interdum patentioribus ceterum juvenilibus similibus, petiolata, petiolo usque ad 1.5 cm longo; adulta (e arboris elatis) integra (vel raro paucilobata), chartacea vel tenuiter coriacea, anguste elliptica vel elliptica vel interdum obovata (2–3.4:1), (6–) 9–15 (–21.5) cm longa, (3–) 4–6 (–9.5) cm lata, apice obtusa vel breviter acuminata, basi angustata, supra costa tomentella excepta glabra, subtus tenuiter arachnoidea primum ferruginea demum cinerascens, costa \pm tomentella supra immersa vel basin versus prominenti subtus elevata, nervis lateralibus principalibus utrinsecus 12–16 arcuato-ascendentibus secundariis \pm aequae multis, subtiliter reticulata, petiolata, petiolo (1–) 1.8–2.8 cm longo. Pseudoracemi in paniculis terminalibus vel axillaribus quo in casu bractea parva subtenti, vel in axillis foliorum singuli orti, modice densiflori, ferrugineo-tomentelli, usque ad 22 cm longi, axe 0.5–1.5 (–6 ubi frugiferi) mm diam.; pedunculi 0.4–1 mm longi, apice biflori tribracteati, bracteis oblongis \pm 1 mm longis 0.4 mm latis obtusis. Flores 5–5.5 mm longi; perianthii limbus ovoideus \pm 1 mm longus extus ferrugineo-tomentellus, tubus limbo angustior rectus vel paulo curvatus extus cinereo-tomentellus, tepala demum revoluta intus ad apicem retrorsum appendiculata appendice rubiginoso-setulosa; stamina parva, filamenta \pm 0.15 mm longo, anthera oblongo-elliptica \pm 0.6 mm longa \pm 0.25 mm lata breviter apiculata; squamae hypogynae 3, alternitepalae, subulatae, 0.3–0.6 mm longae; ovarium sessile, compressum, \pm 0.7 mm longum, ferrugineo-pubescentia, 1-loculare, 2-ovulatum, placenta alternitepala; stylus 4.3–4.6 mm longus, usque ad medium vel ultra pubescens, apice stigmatibus ovoideis \pm 0.4 mm longo coronatus. Folliculus (post dehiscentiam) \pm applanatus, lignosus, stipite 0.7–1.4 cm longo excluso 6.2–7.5 cm longus, 3.3–4.7 cm latus, 2–3 mm crassus. Semina 2, inaeque circumalata, \pm anguste oblonga, 5–6.5 cm longa, 1.5–2.1 cm lata, ad extrema rotundata, nucleo (et cotyledonibus) 3.3–4.3 cm longo, 1.1–1.3 cm lato.

QUEENSLAND.—COOK DISTRICT: Gap Creek, between Rossville and Bloomfield River mouth, Aug. 1959, *Smith* 10725; Bailey’s Creek area, \pm 7 $\frac{1}{4}$ miles ENE. of Daintree, Oct. 1962, *Smith* 11644; Daintree River, Dec. 1929, *Kajewski* 1436; Mossman Intake, Aug. 1948, *Smith* 3948; NW. of Kuranda, Forest Res. 1073, Mar. 1961, *Dansie* AFO/2660; N. of Kuranda, Forest Res. 315, Aug. 1954, *Smith* 5311, 5311A; N. of Kuranda, near Forgan Smith Lookout, June 1949, *Smith* 4283; Kuranda, Apr. 1952, *Volck* QF 52/144; \pm 1 mile WSW. of Kuranda, Mar. 1961, *Dansie* AFO/2015; Atherton [district], *Arnold*; Johnstone River, in 1885, *T. L. Bancroft* (MEL, BRI), in 1886, *T. L. Bancroft*.

Bancroft’s collection dated 1885 is a voucher specimen for a timber sample, “S”, sent to F. M. Bailey. Under No. 344 in Qd Woods 70 (1886) and 103 (1888), Bailey records it as *Darlingia spectatissima*. Under the same number, in Qd Woods 118 (1889), the name appears as *Musgravea* (corrected in a note

to *Musgravea leptostachya*, an obvious slip for *M. stenostachya* because the name is attributed to Mueller and the correct place of publication given. Actually wood sample No. 344 is of *Musgravea heterophylla*.

The unidentified species of *Musgravea* referred to by Johnson & Briggs in Aust. J. Bot. 11: 24 (1963) as having a chromosome number of $2n = 28$ is also *Musgravea heterophylla*. On p. 53 they compare its intermediate leaves with the pinnate leaves of the closely related genus *Austromuelleria* C. T. White. It is also recorded as *Musgravea* sp. in Nomencl. Aust. Timbers 34 (1965) as No. 302 with standard trade common name of briar silky oak. In the field it is sometimes called white oak, whereas *M. stenostachya* is called grey oak.

The bark on larger trees of both species of *Musgravea* is similar. The outer bark is somewhat fibrous, greyish or grey-brown in colour, longitudinally marked with shallow fissures or grooves about 2 cm or more apart, and here and there marked by shallow depressions where large irregular-shaped flakes have been shed. The inner bark (cortex) changes in colour inwards from a pale pinkish brown, through pink to a creamy white against the sapwood. Radial whitish bands occur, often under the grooves in the outer bark. The pinkish area in *M. heterophylla* is marked by very fine radial darker purplish lines, whereas in *M. stenostachya* these lines are creamy coloured. However, the constancy of this difference needs checking.

The first two leaves in both species are opposite although subsequent leaves are normally spiral. This suggests opposite leaves in the ancestry of the genus. The spiral leaves on a young plant of *M. stenostachya* just under 1 m tall are narrowly obovate and acute and attain a length of 25 cm and a width of 5.5 cm. They rarely exceed this size as the tree develops. The pinnatifid leaves of *M. heterophylla* on the other hand may reach more than twice this length.

Although more collections are desirable for confirmation, *M. stenostachya* appears to flower about December-January and *M. heterophylla* in March-April. The former has been found only at altitudes from 600 m upwards, the latter only below 500 m.

KEY TO SPECIES OF MUSGRAVEA

Leaves on plants to small tree size deeply lobed, but on larger trees becoming entire: adult leaves at first distinctly brownish or reddish brown tinged beneath but often becoming greyish beneath when older; leaf-blade (6-) 9-15 (-21.5) cm long and (3-) 4-6 (-9.5) cm wide; leaf-stalk (1-) 1.8-2.8 cm long. Inflorescence with distinctly reddish brown hairy peduncles, bracts, and tips of the flower buds. Fruits (ignoring the stalk) mostly 6-7.5 cm long; seeds with the inner thickened portion (cotyledons) 3.5-4.3 cm long. A tree of the lowlands and lower ranges in rain-forest up to almost 500 m altitude.

M. heterophylla

Leaves always entire: adult leaves always greyish beneath; leaf-blade (2.3-) 3.5-9 (-10) cm long and 1-3.5 cm wide; leaf-stalk 0.3-1.5 (-2.3) cm long. Inflorescences with greyish hairy peduncles, bracts, and tips of the flower-buds. Fruits (ignoring the stalk) mostly 4-5.5 cm long; seeds with the inner thickened portion (cotyledons) 2.5-3 cm long. A tree of the higher ranges in rain-forest at altitudes between 600 and 1500 m. *M. stenostachya*

Neorites genus novum, *Oritidi* R. Br. affine sed foliis "juvenilibus" pinnatis pinnis inaequilateris, alabastris apice \pm oblique truncatis, tepalis inaequilongis, antheris sessilibus, ovulis 6–8, folliculis majoribus pariete crassiore differt.

Flores hermaphroditi, parvi, vix incurvi, compresse angulati, apice \pm oblique truncati. Tepala 4, inaequilonga adaxiali breviora, mox delapsa. Stamina 4; filamentum \pm omnino adnatum; anthera oblonga vel ovato-oblonga, subsessilis. Squamae hypogynae 4, alternitepala, anguste ovatae, acutae. Ovarium sessile, 1-loculare, placenta \pm alternitepala; ovula 6–8, biserialiter imbricata, medio et infra medium ovarii lateraliter affixa. Stylus \pm rectus, compressus, apicem versus non incrassatus sed \pm unisulcatus, stigmatibus parvis terminatus. Folliculus modice magnus, \pm navicularis, sublignosus. Semina 6–8, ala terminali praedita. — Arbor. Folia alterna, grosse crenata, adulta simplicia, "juvenilia" pinnata pinnis inaequilateris. Inflorescentiae axillares, spiciformes, spicibus \pm paniculatim dispositis vel aggregatis. Flores parvi, sessiles, per paria bractea lata striata caduca suffulti.

Species 1, Australiae septentrionali-orientalis incola.

Neorites kevediana species nova. Typus: NNW. of Kuranda, in Forest Res. 315, *Volck & White* AFO/758 (holotypus, BRI.078532, 078533).

Arbor usque ad \pm 25 m alta, trunco usque ad \pm 80 cm diam. Ramuli 1–6 mm diam., juniores paulo angulati ferrugineo- vel rubiginoso-tomentelli, vetustiores teretes glabri \pm atropurpurei lenticellis parvis pallide griseis densiuscule notati; internodia 0.2–1.5 cm longa (vel ramulorum folia "juvenilia" gerentium longiora). Folia spiralia, discoloria, utrinque appresse puberula, demum \pm glabrescentia; "juvenilia" imparipinnata, (petiolo usque ad 6 cm longo incluso) usque ad 35 cm longa, pinnis usque ad 15, deorsum minoribus, suboppositis vel alternis, oblongis, 4–14.5 cm longis, 1.5–4 cm latis (vel terminali interdum longiore et latiore praesertim foliorum paucipinnatorum), basi (terminali excepto) valde inaequilateris, apice obtusis, margine (latere basiscopico $\frac{1}{2}$ – $\frac{2}{3}$ pinnarum lateralium excepto) grosse crenatis, ceterum foliis adultis similia; adulta simplicia, coriacea, anguste angulato-ovata vel angulato-ovata (3–1.8:1), 6–16 cm longa, 2–7 cm lata, apice obtusa, basi longe angustata, margine anguste revoluta sursum grosse crenata crenis glandulosis basin versus integra, costa supra prominula subtus elevata, nervis lateralibus utrinsecus 5–7 subtus prominentioribus, reti venularum laxo, petiolata, petiolo 1–3.5 cm longo. Spicae breves, ferrugineo-tomentellae, axillares, in paniculis usque ad 7 cm longis dispositae vel \pm aggregatae. Flores sessiles, compresse angulati, glabri, \pm 5.8 mm longi, per paria bractea striata usque ad 6 mm longa 6 mm lata obtusa margine dense ciliata subtenti; tepala 4, \pm anguste oblonga, 4.7–5.8 mm longa, 1.1–1.6 mm lata, apice rotundata; stamina 4, filamento applanato omnino adnato, anthera anguste oblonga vel anguste ovato-oblonga \pm 2.8 mm longa \pm 1 mm lata dorso connectivo peranguste triangulari notata; squamae hypogynae 4, brunneae, anguste ovatae, \pm 0.6 mm longae, acutae; ovarium compressum, \pm 0.7 mm longum, ferrugineo-pubescentia vel demum tomentellum, 1-loculare, 6–8-ovulatum, placenta \pm alternitepala, apice in stylum glabrum compressum longitudinaliter \pm unisulcatum \pm 2.5 mm longum contractum. Folliculus subglabrescens, \pm

navicularis, saepe paulo curvatus, 6–7 cm longus, 1.5–2 cm profundus, pariete 3 mm crasso. Semina 6–8, anguste elliptico-oblonga, (ala terminali \pm 3 cm longa inclusa) 4–4.5 cm longa, fere 1 cm lata; raphe infra medium alae posita, per \pm dimidium longitudinis submarginalis. Fig. 2, 3 h–n.

QUEENSLAND.—COOK DISTRICT: NNW. of Kuranda, in Forest Res. 315, Apr. 1952, Volck QF.52/134, 1954, Volck & White AFO/758, Nov. 1955, K. J. White AFO/1287, Aug. 1954, Smith 5308.

Broad and striate caducous bracts similar to those enclosing the pairs of flowers in *Neorites* have also been noticed in *Orites* R. Br., *Xylomelum* Sm., and *Darlingia* F. Muell. Among other things, *Orites* differs in having only 2 ovules, pinnatifid juvenile leaves (so far as known), not or scarcely obliquely tipped flower-buds, and smaller thinner follicles; *Xylomelum* in having only 2 ovules, opposite leaves, and thicker and more woody and differently shaped follicles; and *Darlingia* in having much larger flowers, pinnatifid juvenile leaves, swollen style tip, and seeds winged all round. *Neorites* agrees in more characters with *Orites* than either of the other two genera, despite the greater number of ovules.

Neorites kevediana is a rain-forest tree which reaches the canopy. The trunk is often channelled or fluted at the base, and “sucker shoots” are not uncommon near the base of “bendy” trees. The outer bark is dark brown with numerous small whitish lenticels, mostly oblong and horizontal or in part round and pustular. The inner bark (cortex) on trees over 60 cm diameter is 1.3–1.6 cm thick and somewhat gritty textured. It is divisible into a brownish outer layer, an ill-defined reddish or purplish brown central layer, and a brownish inner layer. In addition, in transverse section, radial and inwardly pointing narrowly triangular whitish areas or “flares” can be seen. The wood is creamy for 3 mm, then changes in colour inwards through pinkish-brown to a purplish red-brown. After drying out the timber is dark brown.

Derivation of the generic name from *Orites* is intended to indicate the affinity of the genus. The specific epithet is derived from the christian names of Messrs. Kevin J. White and H. Edgar Volck, who collected the type and most of the other specimens available. Both were then officers of the Queensland Forestry Department, and to them I have been much indebted for assistance in the field, and in other ways.

RUBIACEAE

Morinda salomonensis Engl. Bot. Jahrb. 7: 47 (1886), (*M. salomoniensis*).

QUEENSLAND.—COOK DISTRICT: Cairns, Michael 670; near Danbulla, Forest Res. 418, Dec. 1952, K. J. White AFO/264; near Danbulla, Forest Res. 185, May 1961, Hyland AFO/1873, June 1955, K. J. White AFO/1023; near Gadgarra, Forest Res. 310, Nov. 1955, K. J. White AFO/1282.

This species, previously known from New Guinea and the Solomon Is., was not known from Australia. The elongate terminal inflorescence, resembling a raceme of flower-heads, distinguishes it from other Australian species of *Morinda*. In habit, foliage, and inflorescence, it more closely resembles *Coelospermum paniculatum* F. Muell. but is readily distinguished by the coalescent calyces and orange to red multiple fruits.

STERCULIACEAE

Argyrodendron actinophyllum (F. M. Bail.) H. L. Edlin ssp. *diversifolium* sub-species nova, foliis subtus persistente denseque lepidotis et domatiis carentibus dignoscenda. Typus: Eungella Range, Bee Creek and Crediton, M. S. Clemens (holotypus, BRI.064183).

QUEENSLAND.—SOUTH KENNEDY DISTRICT: Eungella Range, on foothills, Oct. 1922, Francis; W. from Koumala, at foot of range, May 1927, Francis; Eungella Range, Sep. 1938, White 12956; Eungella Range, Bee Creek and Crediton, Aug.-Nov. 1947, Clemens; Eungella Range, W. of Mackay, Oct. 1951, Smith 4687; Mackay district, State Forest Reserve 652, Sep. 1963, G. J. Swartz M.17.

The name *Argyrodendron diversifolium* was proposed by C. T. White in manuscript, and although never validly published it has appeared in print, e.g. in Qd Forest Service Pamphlet No. 3 (1958), where it is given as the botanical name of Mackay tulip oak. For this reason the epithet is retained although, for the present, recognition of only a subspecies rather than a species seems warranted.

A. actinophyllum ssp. *diversifolium* is known only from the rain-forest areas associated with the ranges west of a strip from Calen to Carmila in the Mackay area. *A. actinophyllum* ssp. *actinophyllum* on the other hand has not been collected north of the Gympie area, over 300 miles to the south. Both subspecies have somewhat similar trunk and foliage, although the bark of trees in the Mackay area is usually not so dark nor so scaly as that on trees in southern Queensland, and the leaflets are persistently scaly beneath and lack domatia in the axils of the lateral nerves. The fruits from trees near Mackay (only two of which are mature) are also similar to those from trees further south.

Heritiera Ait., in the broad sense proposed by Kostermans in *Reinwardtia* 4: 465–583 (1959), is a heterogeneous group even if a convenient one for partial identification of sterile material. Backer, in *Fl. Java* 1: 415 (1963), expresses a similar view. Kostermans appears to have neglected, among other things, adequate consideration of the stamens and the nervature of the wing of the fruiting carpel. In the generic description (p. 468) he states that there are “8 or 10 anther-thecae”, i.e. 4 or 5 stamens. While I found normally 5 stamens in *Heritiera littoralis*, the type species of the genus, in two or three species of *Tarrietia* examined there were normally 10 stamens, and in Australian material of *Argyrodendron* there were usually about 15 or in one species 20 stamens. The peculiar stamens are difficult to count when numerous because of the forked filaments or in some cases broad infolded connectives. Further, the veins are more or less transverse in the wing of the fruiting carpel and pass downwards along the abaxial margin in *Argyrodendron*, whereas in *Tarrietia* they are more or less longitudinal, and are not visible at all in the reduced and thickened wing of *Heritiera* sens. strict. Evidence from wood anatomy has been advanced by several workers for keeping *Argyrodendron* distinct from *Tarrietia*. A chromosome count of $2n = 40$ in *Argyrodendron trifoliolatum* was obtained by a colleague (R. Henderson) from material collected near Brisbane, whereas a count of $n = 15$ has been reported for *Heritiera littoralis* by Mallick & Ghosh in *Taxon* 17: 573 (1968).

Until more convincing evidence than that provided by Kostermans is available I therefore prefer to continue to keep *Argyrodendron* distinct from *Heritiera*, as did W. D. Francis in *Australian Rainforest Trees*, and recognize *H. littoralis* Ait., a mangrove tree, as the only species from Australia in this genus.

Argyrodendron polyandrum species nova, *A. trifoliolatum* F. Muell. affinis sed floribus \pm bis majoribus staminibus \pm 20 differt. Typus: Cook Highway, approx. 1 mile N. of Yule Point, *Webb & Tracey* 6235 (holotypus, BRI.078911).

Arbor elata, basi anteridibus praedita. Ramuli lepidoti, teretes vel juniores paulo compressi, irregulariter costulati, 1–4 mm diam.; internodia 0.2–1.8 (–3.0) cm longa. Stipulae ovatae, \pm 2.2 mm longae, 1.2 mm latae, extus dense lepidotae, intus stellato-pubescentes, marginibus incurvis. Folia alterna, trifoliolata foliolo mediano saepe paulo longiore, petiolata petiolo lepidoto 1–5.5 cm longo (vel foliorum juvenilium longiore): foliola articulata; lamina tenuiter coriacea, anguste elliptica (2.7–3.3:1), 5.7–11.5 cm longa, 1.7–3.6 cm lata (vel foliorum juvenilium major), apice acuminata acumine obtuso, basi angustata, supra \pm glabrescens, subtus dense lepidota (siccata saepe cuprea), costa supra in sulco angusto immersa subtus elevata, nervis lateralibus principalibus utrinsecus ca 11–13 immersis intra marginem conjunctis, reti venularum laxo supra magis conspicuo; petiolulus lepidotus, 0.2–0.7 (–1.4) cm longus, supra canaliculatus, subtus rotundatus. Inflorescentiae axillares, paniculatae paniculis pedunculatis dense lepidotis usque ad 10 cm longis 10 cm latis sed saepe minoribus. Flores pedicellati, pedicellis 0.6–1.1 cm longis supra medium articulatis. Calyx extus dense lepidotus, in alabastro depresso globosus ex apice usque ad medium secus juncturas loborum costulatus, apertus 1.3–1.5 cm diam. usque ad medium lobatus; lobi 5, deltoidei, 4.5 mm longi, 4.3 mm lati, intus stellato-lepidoti; tubus intus (apice excepto) glaber. Androgynophorum \pm 2.2 mm longum, glabrum vel sparsissime lepidotum, basin versus multo ampliatus. Stamina \pm 20, ad apicem gynophori ovarium cingentia in capitulo cavo 5 mm diam. \pm inordinate disposita; filamenta in tubo vel cupula 0.9 mm longa \pm connata; antherarum thecae (vel loculi) distinctae, parallelae, oblongae, usque ad 2 mm longae, utraque dorso ad extremitatem unam connectivi compressi conduplicati 0.9 mm profundi affixa. Ovarium ex carpellis 5 \pm liberis lepidotis 1.6 mm longis constans; stigmata 5, depresso, deltoidea, stellato-radiata. Fructus ignotus.

QUEENSLAND.—COOK DISTRICT: 2 miles N. of Morgan River, near Starcke Station Homestead, July 1962, *Webb & Tracey* 6191A; Shipton's Flat, headwaters of Annan River, S. of Cooktown, Aug. 1943, *Blake* 15084; Granite Creek road, W. of Bloomfield River mouth, July 1962, *Webb & Tracey* 6204; Cook Highway, near Hartley's Creek, July 1962, *Webb & Tracey* 6228; Cook Highway, approx. 1 mile N. of Yule Point, Aug. 1962, *Webb & Tracey* 6235. NORTH KENNEDY DISTRICT: Whitsunday Passage, near Port Molle, July 1935, *White* 12217.

This species is readily distinguished by its large flowers and more numerous stamens, and according to field notes by *Webb & Tracey* occurs in semi-evergreen vine forest.

KEY TO AUSTRALIAN SPECIES OF *ARGYRODENDRON*

Leaves (1-) 3-foliolate; seed-bearing portion of mature fruiting carpels subglobose

Fruiting carpels densely covered with short processes up to 2 mm long on the seed-bearing portion which is up to 1.8 cm in diameter; wing up to 7-9 cm long and 3.5-4.5 cm wide. Calyx-tube stellate-scaly within except for a very narrow band at the base. Leaflets often with 20 or more lateral nerves on each side and coarsely (ultimately whitish) scaly beneath *A. peralatum* (F. M. Bail.) H. L. Edlin ex I. H. Boas

Fruiting carpels with smooth seed-bearing portion 0.8-1.3 cm diameter; wing 3.5-6 cm long and 1.5-2.2 cm wide. Calyx-tube within for the most part free of stellate scales. Leaflets usually with less than 20 lateral nerves on each side (often 12-16) and finely and closely scaly beneath

Flowers up to 7 mm diameter; stamens ± 15 *A. trifoliolatum* F. Muell.

Flowers to 15 mm diameter; stamens ± 20 *A. polyandrum* L. S. Sm.

Leaves 5 (-9)-foliolate; seed-bearing portion of mature fruiting carpels ovoid, smooth

A. actinophyllum (F. M. Bail.) H. L. Edlin

Leaflets soon glabrous beneath, and mostly with domatia on the underside in the axils of the lateral nerves *ssp. actinophyllum*

Leaflets persistently scaly beneath, and lacking domatia on the underside *ssp. diversifolium* L. S. Sm.

***Lasiopetalum ferrugineum* Sm. in Andr. Bot. Rep. t. 208 (1802).**

QUEENSLAND.—MORETON DISTRICT: Mt. Beerwah, July 1960, *Smith*, Aug. 1966, *Blake* 22578, Mar. 1968, *Smith* 13874, Sep. 1968, *Smith* 14175; Mt. Ngungun, Aug. 1962, *Smith*, July 1968, *Smith* 13971; Coochin Hills, Sep. 1962, *W. & E. McKenzie*, Aug. 1968, *Smith* 14039 & 14050; Mt. Tibrogargan, July 1968, *Smith* 13977.

The first report of *Lasiopetalum* occurring in Queensland appeared in Qd Nat. 16: 118 (1962), but no species was mentioned nor specimen cited. Actually it was based on the first specimen cited above. Subsequent collections show that *L. ferrugineum* occurs on four of the Glasshouses—Coochin Hills, Beerwah, Ngungun, and Tibrogargan—at altitudes between 130 and 530 m. I have also seen a single young plant on Coonowrin (Crookneck) on the rocky foothills below the SE. cliffs.

Queensland specimens approach some of the larger-leaved forms from lower altitudes in the Blue Mountains, New South Wales, of *L. ferrugineum* var. *cordatum* Benth. in often having a more or less cordate, slightly broader and irregularly sublobate leaf-base. However, these characters are less apparent in more stunted, narrower-leaved plants growing on more exposed sites. *White* 10504 from Minyon, via Mullumbimby, in northern New South Wales, provides an intermediate locality between the Port Jackson area, from which the species was originally described, and Queensland.

VERBENACEAE

***Clerodendrum parvulum* species nova, floribus parvis cum foliis parvis angustis a congeneribus australiensibus diversa. Typus: 35 miles E. of Musgrave Telegraph Office, *Pedley* 2647 (holotypus, BRI.078534).**

Frutex pauciramosus, ± 1 m altus. Ramuli 0.7-2 mm diam., pilis albis patentibus vel curvatim adscendentibus 0.15-0.5 mm longis vestiti, juniores \pm

straminei leviter compressi, vetustiores cinerascetes teretes tenuiter longitudinaliter fissurati; internodia 0.3–2.2 mm longa. Folia opposita vel subopposita vel ternata vel passim spiralia, sessilia, ad apicem projecturae persistentis e ramulo ortae articulata; lamina subcoriacea, breviter patenterque pubescens, atropunctata, anguste obovata vel anguste elliptica vel anguste rhombica (7.5–4.5:1), (0.7–) 1.5–2.5 cm longa, (1.5–) 2.5–3.5 mm lata, apice obtusa vel subacuta, basi anguste cuneata, margine decurva, costa supra obscura subtus elevata, nervis obscuris. Flores albi, axillares, singuli vel saepe in cymis trifloris dispositi; pedunculus cymae pubescens usque ad 1.7 cm longus, apice bibracteatus, demum divaricatus; pedicelli pubescentes, 1.2–1.5 cm longi, supra medium bibracteolati eo floris mediani cymae excepto. Calyx pubescens, tubuloso-campanulatus, 4.5–5.5 mm longus, subaeque 5-lobatus, lobis deltoideis \pm 1.8 mm longis acutis intus \pm pubescentibus. Corollae tubus \pm cylindraceus, 8.5–10 mm longus, \pm 2 mm diam., ad faucem paulo obliquus, extus glaber, intus supra insertionem staminum pubescens; lobi 5, obovati vel anterior ellipticus, 6.6–8.5 mm longi, 4.1–5 mm lati, apice subrotundati vel obtusi, margine ciliati, extus parce pubescentes. Stamina 4, 5–6.8 mm exserta, 9.6–10.8 mm longa, ca 3 mm supra basin corollae inserta; filamenta basi barbata, paribus anterioribus \pm 1.2 mm longioribus; antherae ellipticae, \pm 2.3 mm longae. Ovarium glabrum, subglobosum, 1.5 mm longum, longitudinaliter leviterque 4-canaliculatum, imperfecte 4-loculare, 4-ovulatum; stylus glaber, \pm 1.25 mm longus, apice breviter bilobatus, lobis 0.7–1 mm longis. Fructus (imperfectus ?) globosus, \pm 7 mm diam., non profunde 4-lobatus, per calycem auctum partim inclusus. Semina non visa.

QUEENSLAND.—COOK DISTRICT: 35 miles E. of Musgrave Telegraph Office, June 1968. *Pedley* 2647; near Musgrave Telegraph Office, \pm 37 miles SW. of southernmost part of Princess Charlotte Bay, May 1968, *Breeden*.

Clerodendrum traceyanum (F. Muell.) F. Muell. and *C. holtzei* Bleeser are the only other Australian species with the corolla tube less than 1.5 cm long. However, both have broadly ovate or ovate leaves whereas those of *C. parvulum* are narrowly obovate or narrowly elliptic. It was not possible to place the species in Bakhuizen's treatment of the genus in Malaysia in *Bull. Jard. Bot. Buitenz. ser 3*, 3: 73–96 (1921).

Largely because it was the only tropical member of the family described as having narrow leaves and in some ways resembling *Clerodendrum*, type material of *Huxleya linifolia* Ewart & Rees was kindly compared with the Breeden collection of *C. parvulum* by Mr. J. H. Willis, who confirmed that the two were distinct, *Huxleya* having “. . . leaves . . . glabrous, narrow linear, 3–6 cm long and with tightly revolute margins . . .” as well as “distinctly quadrangular stems and quite a long corolla tube”. He was also unable to match the Queensland plant among collections at Melbourne of *Clerodendrum* or unplaced Verbenaceae.

Both collectors were able to obtain only a single sheet and stated that the plant was rare. In both localities it was found growing on poorly drained sandy soil in open tea-tree (*Melaleuca* sp.) woodland.

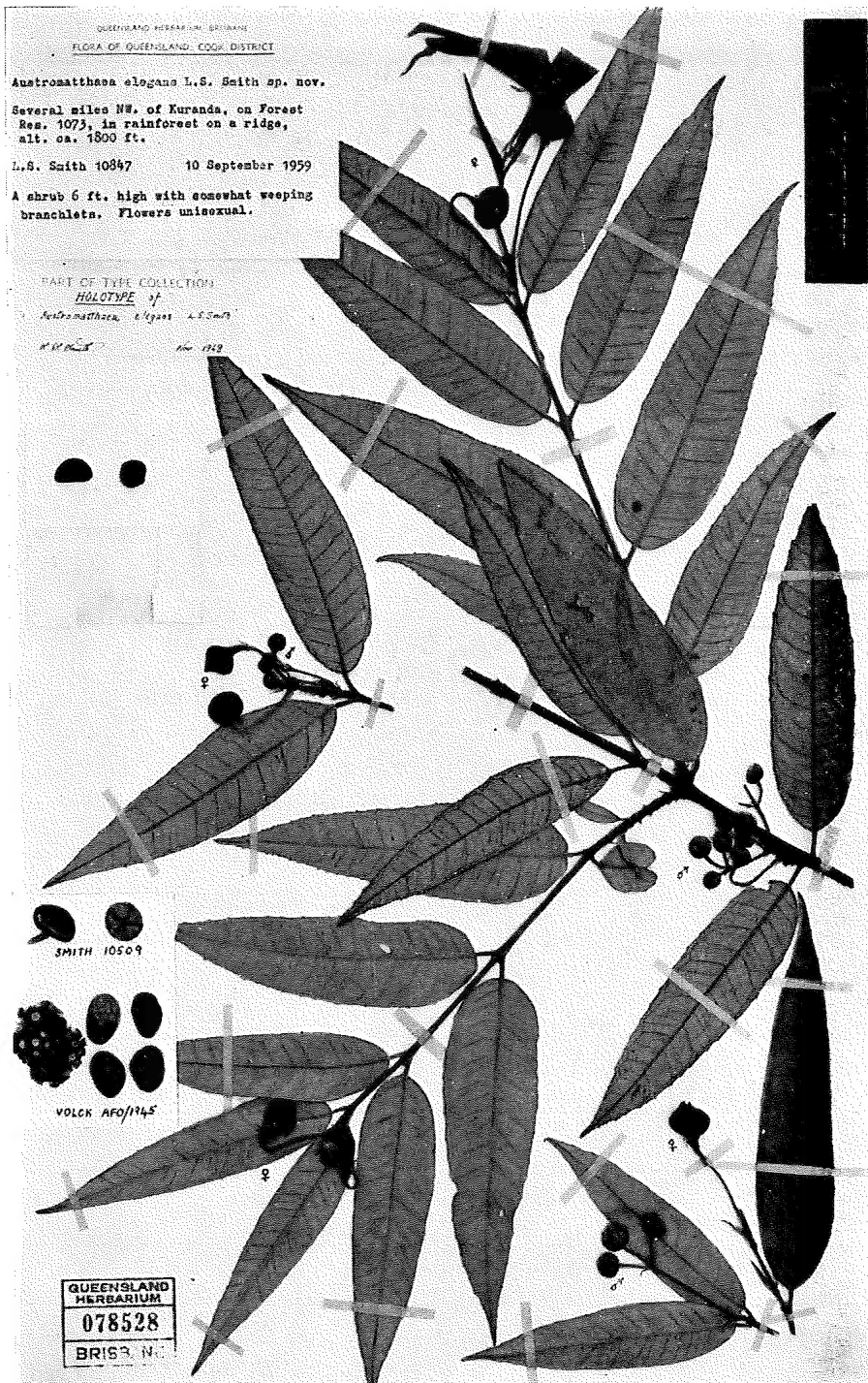


FIG. 1. *Austromatthaea elegans*, holotype with inset showing female flower and shed calyptra, and fruiting receptacle and carpels.



FIG. 2. *Neorites kevediana*, part of holotype with inset showing fruits and a seed.

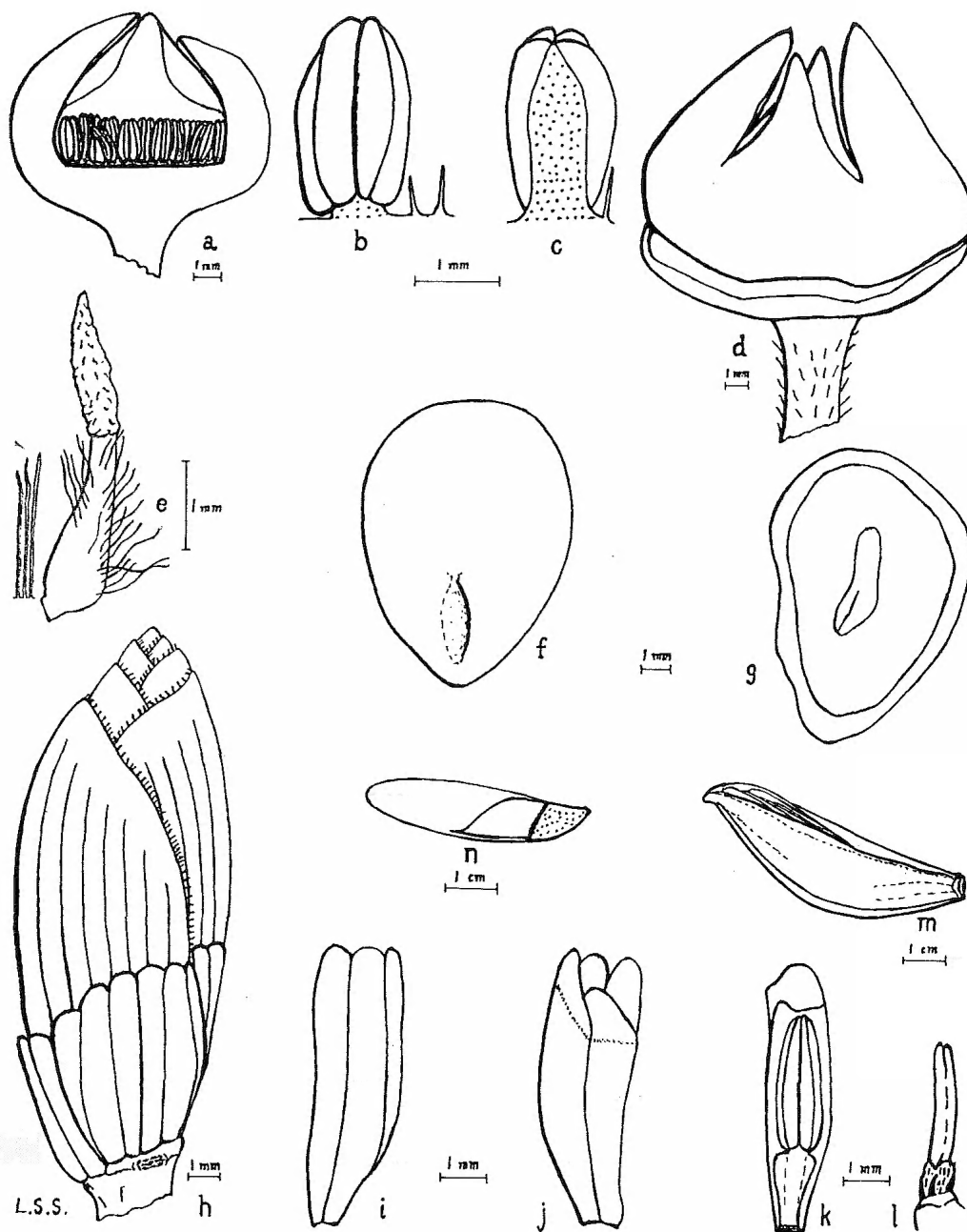


FIG. 3. a-g, *Austromatthaea elegans*: a, male flower cut longitudinally; b and c, front and back view of stamen; d, female flower with calyptra separating; e, carpel; f, seed; g, seed cut longitudinally to show embryo. h-n, *Neorites kevediana*: h, part of inflorescence; i and j, front and back view of mature flower bud; k, tepal with attached stamen; l, ovary, style and hypogynous scales; m, follicle; n, seed.